

--13. A signal transmission apparatus for transmitting a first data stream and a second data stream, said signal transmission apparatus comprising:

a modulator operable to assign each data stream to a respective constellation in a signal space to produce modulated signals such that the number of signal points of the first data stream assigned in the signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including synchronization data allocated at predetermined intervals; and

a transmitter operable to transmit the modulated signals.

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14. A signal receiving apparatus comprising:

a receiver operable to receive a received signal having information of a first data stream and a second data stream, wherein the number of signal points of the first data stream assigned in a signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including synchronization data allocated at predetermined intervals; and

a demodulator operable to demodulate the second data stream according to the data for demodulation in the first data stream.

15. A signal transmission system for transmitting and receiving a first data stream and a second data stream, said signal transmission system comprising:

a signal transmission apparatus for transmitting the first and second data streams, said signal transmission apparatus including a

modulator operable to assign each data stream to a respective constellation in a signal space to produce modulated signals such that the number of signal points of the first data stream assigned in the signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including synchronization data allocated at predetermined intervals, and a transmitter operable to transmit the modulated signals; and

B₂ a signal receiving apparatus including a receiver operable to receive a received signal having information of the first and second data streams, and a demodulator operable to demodulate the second data stream according to the data for demodulation in the first data stream.

16. A signal transmission method for transmitting a first data stream and a second data stream, said signal transmission method comprising:

assigning each data stream to a respective constellation in the signal space to produce modulated signals such that the number of signal points of the first data stream assigned in a signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including synchronization data allocated at predetermined intervals; and
transmitting the modulated signals.

17. A signal receiving method comprising:

receiving a received signal having information of a first data stream and a second data stream, wherein the number of signal points of the first data stream assigned in a signal space is different from the number of signal points of the second data stream assigned in the signal space, and the first data stream has data for demodulation including synchronization data allocated at predetermined intervals;
and

demodulating the second data stream according to the data for demodulation in the first data stream.--